

SECONDARY PERFORMANCE EVENT TEMPLATE for 2007-2010 MAP

TYPICAL SEQUENCE OF COMPONENTS

Minimum Total Points = 20 (11 prompts)

Maximum Total Points = 26 (15 prompts)

N = necessary components

*See standardized scoring guide

SCENARIO

Ideally the template starts with the scenario of a new experimental situation.

	Performance Event COMPONENT	GLEs that may be addressed	NOTES	NO of ITEM PROMPTS	TOTAL POINT RANGE
N	Questions about experimental design	<p>7.1.A11b: Analyzing an experiment, identify the components (i.e., independent variable, dependent variables, control, constants, multiple trials) and explain their importance to the design of a valid experiment</p> <p>7.1.A11c: Design and conduct a valid experiment</p> <p>7.1.A11d: Recognize it is not always possible, for practical or ethical reasons, to control some conditions....</p> <p>7.1.A11e: Acknowledge some scientific explanations...cannot be tested using the standard experimental “scientific method” due to the limits of the laboratory environment, resources, and/or technologies</p> <p>7.1.A11f: Acknowledge there is no fixed procedure called “the scientific method”, but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations</p> <p>7.1.A11g: Evaluate the design of an experiment and make suggestions for reasonable improvements</p> <p>7.1.D11b: Evaluate the reasonableness of an explanation (conclusion)</p>	<i>Some questions may be asked related to a different scenario later in the Performance Event</i>	1-2	2-5

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DATA GIVEN

	Performance Event COMPONENT	GLEs that may be addressed	NOTES	NO of ITEM PROMPTS	TOTAL POINT RANGE
N *	Create a multi-line graph requiring title, axes labeled, intervals numbered, data plotted accurately	7.1.E11a: Communicate the procedures and results of investigations through multiple line graphs		1	4
	Manipulate/Extrapolate data	7.1.B11e: Calculate the range, average/mean, percent, and ratios for sets of data 7.1.C11b: Analyze experimental data to determine patterns, relationship, perspectives, and credibility (e.g., extrapolate data, explain the relationship between the independent and dependent variables)	.	1-2	1-2
N	Interpret data/graph	7.1.B11d: Judge whether measurements and computation of quantities are reasonable 7.1.C11a: Use quantitative and qualitative data to construct reasonable explanations/conclusions 7.1.C11b: Analyze experimental data to determine patterns, relationship, perspectives, and credibility (e.g., extrapolate data, explain relationship between the independent and dependent variable) 7.1.C11c: Identify the possible effects of measurement and calculation errors on the validity and reliability of data 7.1.D11a: Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories) 7.1.D11b: Evaluate the reasonableness of an explanation (conclusion) 7.1.E11b: Communicate and defend a scientific argument		1-2	1-2 (1/item)

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NEW QUESTION RELATED TO SAME SCENARIO

	Performance Event COMPONENT	GLEs that may be addressed	NOTES	NO of ITEM PROMPTS	TOTAL POINT RANGE
N (see note)	Questions about experimental design	<p>7.1.A11b: Analyzing an experiment, identify the components (i.e., independent variable, dependent variables, control, constants, multiple trials) and explain their importance to the design of a valid experiment</p> <p>7.1.A11c: Design and conduct a valid experiment</p> <p>7.1.A11d: Recognize it is not always possible, for practical or ethical reasons, to control some conditions...</p> <p>7.1.A11e: Acknowledge some scientific explanations...cannot be tested using the standard experimental “scientific method” due to the limits of the laboratory environment, resources, and/or technologies</p> <p>7.1.A11f: Acknowledge there is no fixed procedure called “the scientific method”, but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations</p> <p>7.1.A11g: Evaluate the design of an experiment and make suggestions for reasonable improvements</p> <p>7.1.D11b: Evaluate the reasonableness of an explanation (conclusion)</p>	Ask questions regarding those ideas not assessed in other items in Performance Event	1-2	2-5

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OPTIONAL NEW SCENARIO (same theme)

	Performance Event COMPONENT	GLEs that may be addressed	NOTES	NO of ITEM PROMPTS	TOTAL POINT RANGE
	Write a question that can be tested (related to new scenario)	7.1.A11a: Formulate <u>testable questions</u> and hypotheses 7.1.B11f: Recognize observation is biased by the experiences and knowledge of the observer... 7.1.D11a: Analyze whether evidence (data) and scientific principles support proposed explanations (hypotheses, laws, theories)		1	1
N	Write a testable hypothesis (for question posed in new scenario)	7.1.A11a: Formulate testable questions and <u>hypotheses</u>		1	1
N	Identify Independent and Dependent Variables	7.1A11b: Analyzing an experiment, identify the components, i.e., <u>independent variable</u> , <u>dependent variables</u> , control, constants, multiple trials) and explain their importance to the design of a valid experiment	<i>(This GLE may have been addressed previously)</i>	1 (2 prompts)	2 (1/prompt in item)
N	Identify variables to be held constant	7.1A11b: Analyzing an experiment, identify the components, i.e., independent variable, dependent variables, <u>control</u> , <u>constants</u> , multiple trials) and explain their importance to the design of a valid experiment	<i>(This GLE may have been addressed previously)</i>	1	1
N	Identify measurements to be taken and appropriate tools/techniques for collecting data	7.1.B11a: Make qualitative and quantitative observations using the appropriate senses, tools and equipment to gather data..., 7.1.B11b: Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, force (weight) to the nearest Newton, temperature to the nearest degree Celsius, time to the nearest second 7.1.B11c: Determine the appropriate tools and techniques to collect, analyze and interpret data	<i>(A GLE may have been addressed previously)</i>	1	1-2

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	Performance Event COMPONENT	GLEs that may be addressed	NOTES	NO of ITEM PROMPTS	TOTAL POINT RANGE
N *	Describe an experimental procedure for investigation	7.1A11b: Analyzing an experiment, identify the components, i.e., independent variable, dependent variables, control, constants, multiple trials) and explain their importance to the design of a valid experiment 7.1.A11c: Design and conduct a valid experiment		1	3
N *	Create a data table for measurements	7.1A11b: Analyzing an experiment, identify the components, i.e., independent variable, dependent variables, control, constants, multiple trials) and explain their importance to the design of a valid experiment 7.1.E11a: Communicate the procedures and results of investigations and explanations through ...data tables....		1	3

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Generic Scoring Guide for DATA TABLES, Grade 11

Two Total Points

One point for each of the following:

Point 1: The row or column headings indicate what information is to be manipulated and recorded relative to the independent variable
(can be a descriptive heading **with units, if necessary**, or the conditions to be varied may be written in)

AND

The row or column headings indicate what information is to be observed and recorded relative to the dependent variable
(can be a descriptive heading **with units, if necessary**, or the conditions to be varied may be written in)

Point 2: Data table is organized to allow for collection and analysis of data relevant to the investigation.

Prompt reads:

Construct a data table in the space below that other students could use to record and analyze the data collected during the new investigation related to (reference to new testable hypothesis). Be sure to label rows and columns appropriately and to include units if necessary.

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Generic Scoring Guide for Writing an EXPERIMENTAL PROCEDURE, Grade 11

Three Total Points

One point for each of the following:

Point 1: Procedure provides a qualitative outline which includes **3 or more steps** that are logical and appropriate for **answering the question**.

Point 2: Procedure provides enough **specific, quantitative, and appropriate information** that a knowledgeable person could conduct the experiment and obtain the same results.

Point 3: Procedure indicates an understanding that the **independent variable changed**, the **effect on the dependent variable is observed**, and the **need to hold all other factors constant**

Prompt reads:

Describe at least three essential steps in the procedure needed to conduct your new valid experiment related to (reference to new experiment). The procedure must be written so that students in another science class could clearly follow your instructions and successfully complete the investigation.

(atleast ten lines are provided for the response)

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Generic Scoring Guide for Multi-Line GRAPH, Grade 11

(10x10 grid provided with spaces for labeling of axes and title)

Four Total Points

One point for each of the following:

- **Appropriate title:** a statement of the relationship between the independent and dependent variables or a statement of what is being tested
- **Both axes correctly labeled (horizontal axis labeled with independent variable, vertical axis labeled with dependent variable), with units if appropriate**
- **Appropriate number scales labeled along each axis:** numbers written on the gridlines, numbers that allow all data to be plotted, consistently scaled
- **All data points correctly plotted and connected by lines AND an appropriate key to identify each line**

Prompt reads:

Use all the data from the data table to construct a multi-line graph on the grid below.

Be sure to provide:

- an appropriate title
- labeled axes with appropriate units
- appropriate number scales
- correctly plotted data with a key

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BLANK TEMPLATE FOR GRAPHING PROMPT:

Use the data from the data table on page _____ to construct a multi-line graph on the grid below.

Be sure to provide:

- an appropriate title
- labeled axes with appropriate units
- appropriate number scales
- correctly plotted data with a key

